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**HOSPITAL BUILDING SAFETY BOARD
Instrumentation Committee**

Thursday, January 27, 2022
9:00 a.m. – 3:00 p.m.

Teleconference Meeting Access:
[HBSB GoToMeeting Instrumentation Committee](#)
Access Code: 191-634-925

Committee Members

Marshall Lew, Chair
Bruce Clark, Vice-Chair
Farzad Naeim
Tim McCrink

Consulting Member

Hamid Haddadi
Moh Huang
Tony Shakal

Board Member

Louise Belair

HCAI Staff

Erol Kalkan
Roy Lobo
Ali Sumer
Richard Tannahill
Jean-Paul Buchanan

HBSB Staff

Ken Yu, Executive Director
Joanne Jolls
Evelt Torres

- 1 **1. Call to Order and Welcome**
- 2 Marshall Lew, Committee Chair, called the meeting to order on Jan 27, 2022, at 9:00
- 3 a.m., and HCAI Executive Director, Ken Yu called roll.
- 4 **2. Roll Call and Meeting Advisories/Expectations**
- 5 Six members of the Committee present constitute a quorum. There being six present at
- 6 the time of roll, a quorum was established.

1 Mr. Yu read the public announcement regarding COVID-19, meeting rules and
2 procedures.

3 **3. Discussion on the draft White Paper outline, “The benefits of strong motion
4 instrumentation in hospital facilities.”**

5 **Presenter: Bruce Clark, Committee Chair**

6 Mr. Clark informed the committee that the purpose of preparing the white paper is to
7 identify issues associated with the strong motion instrument program and data related to
8 HCAI’s responsibility to make hospitals safer.

9

10 Mr. Clark identified points to be included in the white paper draft:

- 11 • Status of HCAI instrumentation - Mr. Clark stated that the idea was to know how
12 the instrumentation program is doing since upgrading and updating
13 communication systems to provide data to HCAI.
- 14 • Utility of hospital instrumentation- He discussed the utility of hospital
15 instrumentation from the standpoint of hospital safety and suggested that the
16 draft section should be done by experts working on structural and non-structural
17 hazards.
- 18 • Improving the usefulness of the current strong-motion data and network –
19 Mr. Clark commented that in this section, the draft should focus on specific things
20 that should be done to make the instrumentation more valuable. With the current
21 strong motion data, there’s a need to discuss whether there is a strong motion
22 data for issues like geographical areas where data is not very concentrated or
23 accessible when the power goes down.
- 24 • The role that alternative instrumentation and data analytics can play in the future
25 – Mr. Clark gave an in-depth discussion about alternative instrumentation. He
26 talked about using MEMs and Community Seismic Networks in predicting ground
27 and building responses. He also talked about advancements in SHAKEALERT
28 for emergency response in hospitals and upgrading SHAKEMAPS to define the
29 risk of hospital buildings. Mr. Clark explained the use of laser interferometry and
30 LIDAR imagery to supplement accelerometer data to see millimeter level
31 displacement during an earthquake. This is to improve on damage evaluation.
- 32 • Improving community awareness of the value of strong motion instrumentation -
33 Mr. Clark noted that there is a marketing issue of how strong motion is handled to
34 make sure that everybody understands it. He suggested that the white paper
35 should provide information not only to the technical team but to everybody in the
36 community as to why strong-motion instrumentation is important.

1 **Discussion and Input**

2 Mr. Tannahill clarified that although HCAI can provide assistance writing the draft, he
3 suggested the sub-committee put the white paper draft together. Mr. Naeim expressed
4 that he liked the idea of a sub-committee, but that needing to have a meeting each time
5 committee members want to discuss the draft would make the process long. He
6 proposed that the committee select two or three members who will draft the white
7 paper, then present the draft for public and committee review. Mr. Clark and Mr. Yu
8 agreed to that proposal.

9

10 Concerning the topics Mr. Clark was discussing, Mr. Haddadi requested a bullet point
11 be included stating, "What is the output that HCAI would like to get from seismic
12 instrumentation." This will give a better idea of improving instrumentation which will give
13 direction for meeting the needs of HCAI. Mr. Clark accepted the idea. Mr. Naeim
14 reminded the committee before they discuss what HCAI needs from instrumentation,
15 the committee must lay out what type of information is needed by the instrumentation.

16

17 In connection with the second bullet point, the utility of hospital instrumentation, Mr. Lew
18 added that the committee needs to emphasize the benefits to the hospital owners/
19 operators. Hospital owners/operators will use strong-motion instrumentation to benefit
20 them in their operations.

21

22 Mr. Yu read a comment from a public member, stating that one benefit of the topic
23 would be in full modular hospital construction where special moment frame construction
24 is ideal. Instrumentation could also monitor the unit through transportation to show that
25 they are not damaged to completion. Mr. Clark agreed with that point and added that
26 since hospital construction methods are changing, the instrumentation is important in
27 creating modular hospitals quickly and cheaply.

28

29 After the discussion, Mr. Lew concluded that the committee has a good outline to start
30 the draft white paper. He asked HCAI staff to provide reports on what buildings are
31 instrumented and where the buildings are located, types of instrumentation, and building
32 types of construction. These reports will enable modification of instruments to use to
33 focus on structural damage and understand those effects better.

34

35 Mr. Lew asked Mr. Reis to give a brief overview of the type of instrumentation that he's
36 been working with. In response, Mr. Reis talked about Safehub, who has developed
37 small accelerometer sensors used for post-earthquake response and recovery. The
38 sensors are installed in buildings and then hooked up to a web-based platform to

1 provide the building owners/users an immediate estimate of damage to the building.
2 The sensors can be installed in offices, schools, hospitals, manufacturing, retail,
3 biotech, and hi-tech companies. Mr. Reis expressed that Safehub company will be more
4 than happy to contribute to the white paper.

5 Mr. Shakal asked if the data from the sensors would be private. Mr. Reis said the
6 information is not meant to contribute to a public database but for clients to have rapid
7 information after an earthquake to decide whether the building is safe to occupy or
8 where it needs to be inspected.

9

10 Mr. Lew asked whether the white paper is limited to just HCAI instrumentation or open
11 to discuss the general usefulness of the data. Mr. Reis gave an example of office
12 buildings in Los Angeles where owners are required by city ordinance to pay to have
13 their building instrumented with SMIP sensors but are not allowed access to the data
14 collected. Owners then add additional instrument to their buildings so they can use the
15 data specifically for their own post-earthquake response. Mr. Lew also questioned if
16 there were hospitals that are instrumented. Mr. Reis replied that there are clinic-type
17 buildings that are instrumented but no HCAI hospitals. Mr. Haddadi asked if HCAI would
18 like to be able to access data after an earthquake to know which hospitals HCAI needs
19 to concentrate its effort on and which ones they can delay the response to. Mr.
20 Tannahill confirmed that that HCAI would be interested in accessing that kind of
21 information.

22

23 Mr. Lew concluded that the committee now has an outline of the draft white paper with
24 six sections. Mr. Yu recommended that since there are eight committee members, there
25 should be four sub-committees. Mr. Naeim suggested that he and Mr. Huang be on the
26 sub-committee on Section 3, Utility of Hospital Instrumentation. Mr. Lew and Mr. Shakal
27 are to work on Section 4, Improving the Usefulness of our Current Strong Motion Data
28 and Network. Mr. Malley and Mr. Haddadi were appointed to be on the Section 5 sub-
29 committee. The Role that Alternative Instrumentation and/or Data Analytics Can Play in
30 the Future. Mr. Clark and Mr. McCrink will work on Section 6, Improving Community
31 Awareness of the Value of Strong-Motion Instrumentation. Mr. Lobo was appointed as
32 the link between the sub-committees and HCAI staff.

33

34 Mr. McCrink updated members on the upcoming meeting scheduled on April 2, 2022,
35 and October 22, 2022. Mr. Naeim advised that all sub-committees complete their part of
36 the draft before March 26, 2022, to be presented at the April 28, 2022 Full Board
37 meeting.

38

1 Mr. Lew asked if any members of the public were interested in being part of the
2 discussions with the sub-committees. Mr. Reis volunteered to help on the types of
3 instrumentation and community value. Mr. Marshall advised all the sub-committee
4 members to contact Dr. Carlos Ventura of the University of British Columbia because
5 the university has done a lot of instrumentation of public facilities, so his expertise could
6 be helpful.

7

8 **MOTION: [Naeim/McCrink]**

9 The committee voted to accept the draft outline and accept the committee's
10 assignments as made. Section 2, to be worked on by HCAI Staff with the help of Mr.
11 Naeim; Section 3, Mr. Naeim and Mr. Huang; Section 4, Mr. Malley and Mr. Haddadi;
12 and Section 5, Mr. Clark and Mr. McCrink.

13

14 **Informational and Action item**

- 15 • Add "What is the output that HCAI would like to get from seismic instrumentation," to
16 the white paper draft.

17

18 **4. Comments from the public/committee members on issues not on this agenda**

19 **Presenter:** Marshall Lew, Committee Chair

20

21 **Discussion and Input**

22

23 Mr. Yu announced Joanne Jolls' retirement. Her last physical date will be on April 1,
24 2022. Mr. Yu commended her for her support and being a great asset to the board. Mr.
25 Lew also appreciated Ms. Jolls for her work. Ms. Jolls thanked everybody for their
26 support. She expressed that it has been a privilege working for the Board.

27

28 Having concluded the meeting, Mr. Lew expressed that it was productive and thanked
29 everyone for their participation.

30

31 **Informational and Action item**

- 32 • None.

33

34 **5. Adjournment**

35 Mr. Lew adjourned the meeting on January 27, 2022, at approximately 10:46 a.m.